[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 29

[Docket No.FAA-2017-1129; Notice No. 29-042-SC]

Special Conditions: Bell Helicopter Textron, Inc. (BHTI), Model 525 Helicopter; Mode Annunciation

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the BHTI Model 525 helicopter. This helicopter will have a novel or unusual design feature associated with fly-by-wire flight control system (FBW FCS) functions that affect the pilot awareness of the flight control modes while operating the helicopter. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: April 18, 2018.

FOR FURTHER INFORMATION CONTACT: George Harrum, Aerospace Engineer, Rotorcraft Standards Branch, Policy and Innovation Division, FAA, 10101 Hillwood Pkwy, Fort Worth, TX 76177; telephone (817) 222-4087; email George.Harrum@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

On December 15, 2011, BHTI applied for a type certificate for a new transport category helicopter designated as the Model 525. The aircraft is a medium twin-engine rotorcraft. The design maximum takeoff weight is 20,500 pounds, with a maximum capacity of 19 passengers and a crew of 2.

The BHTI Model 525 helicopter will be equipped with a four-axis full authority digital FBW FCS that provides for aircraft control through pilot input and coupled flight director modes. Current regulations are inadequate in the area of pilot awareness of the flight control modes while operating the helicopter. The proposed special condition will require that suitable mode annunciation be provided to the flight crew for events that significantly change the operating mode of the system but do not merit the traditional warnings, cautions, and advisories.

Type Certification Basis

Under the provisions of 14 CFR 21.17, BHTI must show that the Model 525 helicopter meets the applicable provisions of part 29, as amended by Amendment 29-1 through 29-55 thereto. The BHTI Model 525 certification basis date is December 31, 2013, the effective date of application to the FAA.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 29) do not contain adequate or appropriate safety standards for the BHTI Model 525 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same or similar novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the BHTI Model 525 helicopter must comply with the noise certification requirements of 14 CFR part 36, and the FAA must issue a finding of regulatory adequacy under section 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The BHTI Model 525 helicopter will incorporate the following novel or unusual design features: a four-axis full authority digital FBW FCS. Pilot control inputs, through the mechanically linked cockpit controls (cyclic, collective, directional pedals), are transmitted electrically to each of the three Flight Control Computers (FCCs). The pilot control input signals are then processed and transmitted to the hydraulic flight control actuators which affect control of the main and tail rotors. The FCCs process the pilot control input signals depending on the flight control mode in affect.

Discussion

The current 14 CFR 29 standards do not provide adequate standards for pilot awareness of the flight control modes while operating the helicopter. These special conditions require that suitable mode annunciation be provided to the flight crew for events that significantly change the operating mode of the system but do not merit the traditional warnings, cautions, and advisories.

Discussion of Comments

Notice of proposed special conditions No. 29-042-SC for the BHTI Model 525 helicopter was published in the Federal Register on December 7, 2017 (82 FR 57687). One commenter, Sikorsky Aircraft (Sikorsky), responded to the Notice.

Sikorsky requested that the annunciation required by the proposed special conditions be placed within the immediate field of view of the pilot. Sikorsky also requested that because the word "significantly" in the proposed special conditions may be subjective, the following language be added to provide clarification: "in such a way as to alter the pilots primary control strategy."

The FAA agrees. We have revised the special conditions accordingly.

Applicability

As discussed above, these special conditions are applicable to the BHTI Model 525 helicopter. Should BHTI apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of rotorcraft. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 29

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Bell Helicopter Textron, Inc., Model 525 helicopter:

Mode Annunciation: A means must be provided, within the pilots' primary field of view, to indicate to the crew any mode that significantly changes or degrades the handling or operational characteristics of the rotorcraft in such a way as to alter the pilots' primary control strategy.

Issued in Fort Worth, Texas on March 30, 2018.

Jorge Castillo,
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Policy and Innovation Division,
Aircraft Certification Service.

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